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ABOUT YOU, YOUR COMPANY, AND YOUR EXPERTISE

Ph. D in Materials Science and Engineering from Stony Brook University, 15 years in Siemens supporting technology transfers of programs/ products into power systems

25 years' experience in research and technology in the area of materials/sensors/coatings for power systems and their operational flexibility, 5 years in data-driven intelligent manufacturing for additive manufacturing (AM)

Siemens Corporation is a research organization with a rich portfolio covering all aspects of engineering and computational disciplines comprising of (but not limited to) materials, sensors and controls, cyber-physical system simulations, data analytics and partners closely with business units for early R&D activities and technology download for industrial solutions.

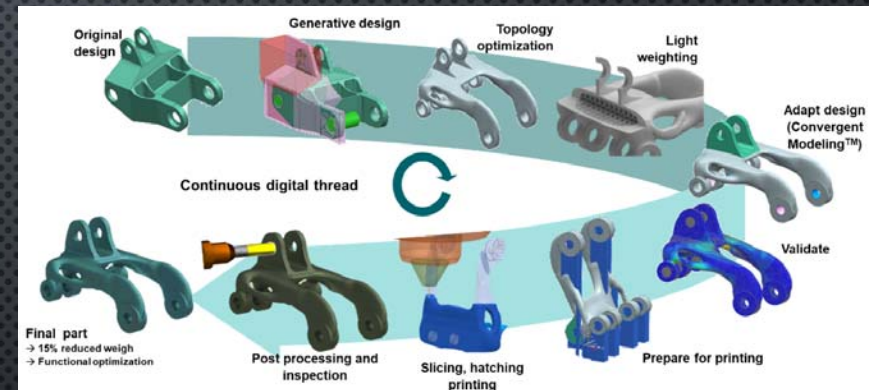
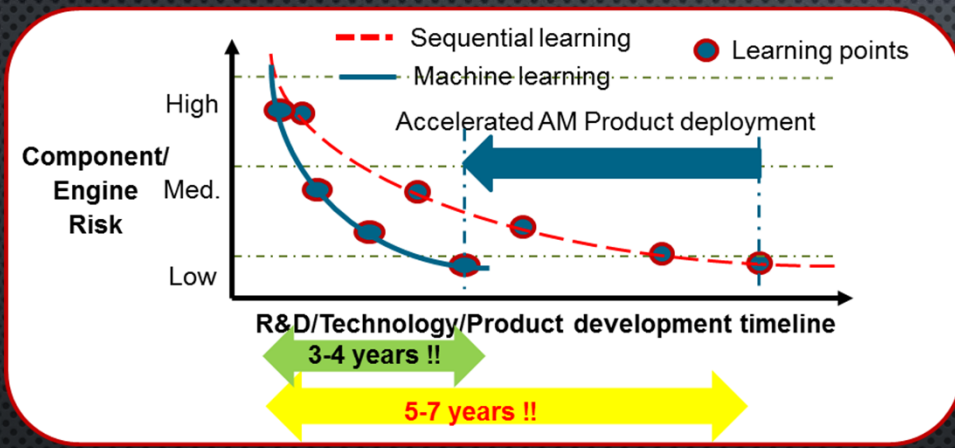
IMPORTANT WORK ALREADY UNDERWAY THAT WILL ENABLE THE SUITE OF ADVANCED MANUFACTURING APPROACHES FOR THE FUTURE OF CLEAN COAL AND CCUS TECHNOLOGIES

Environmental (gaseous/solid-state) testing of materials and coatings in Coal-fired/IGCC systems (syngas, reducing/oxidizing) for degradation modes in power plants

Simulation models for corrosion/erosion to predict localized high risk areas in power systems, thermal spray/weld overlay solutions for erosion/corrosion protection of materials

Advanced manufacturing process developments for thermal spraying, selective laser melting, electron beam melting, binder jetting, Markforged, laser metal deposition for low/high temperature capable materials and coatings

SEED IDEAS FOR DISCUSSION TODAY, HOW DOE CAN BETTER USE THE SUITE OF ADVANCED MANUFACTURING APPROACHES IN FUTURE CLEAN COAL AND CCUS EFFORTS



Conventional process

Novel paradigm

"Testing is final validation at the end of development process"

"Testing is integrated part of development process"

- Sequential development processes
- Conservative development approach
- Moderate development goals
- Long development cycles

- Parallel and integrated development processes
- Radical development approaches
- Ambitious development goals
- Accelerated goals, short iteration cycles

REIMAGINE PRODUCTS

- Reduce weight, material
- Expand performance
- Modular concepts for implementation
- Accelerate innovation
- Digital (not physical) inventory

Need ASME Codes for Materials Properties for Early Technology Download for Flexible Operations

